

Montana Weather/Precipitation Summary

September 2015 by NOAA's National Weather Service Great Falls Montana

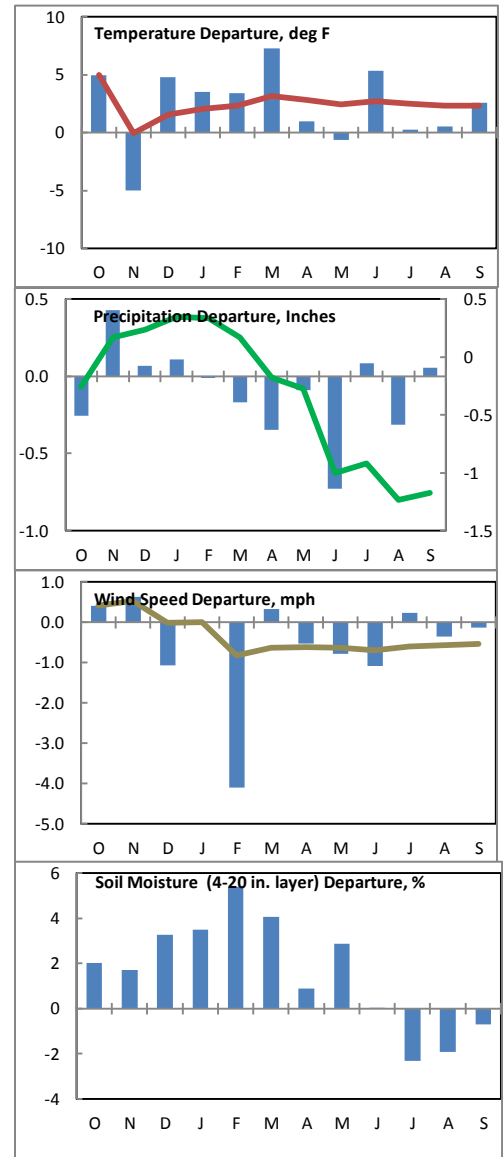
A persistent trough of low pressure along the west coast provided regular weather disturbances to Montana (Fig. 1). Temperatures were generally above normal, with widely variable precipitation. There were a few record warm high temperatures set during the month.

Statewide composite temperatures averaged 2.6°F above normal for the month. The temperature anomalies ranged from -1.0°F at Yaak to +6.6°F at Baker (Fig. 2). The warmest average monthly temperature was 66.9°F at Broadus, and the coolest was 46.8°F at Gates Park. This was the 60th warmest September of record. For the past 12-months, the statewide composite average temperature is 2.3°F above normal. Eleven of the last 12 months have had warmer than normal temperatures.

The monthly departure from normal for precipitation across Montana is shown in Figure 3. Above normal precipitation was over central and far eastern Montana, while other areas were dry. The highest amounts were 3.18-inches near Neihart and 5.50-inches at Lakeview Ridge. Statewide, this month averaged 1.26-inches, or 0.06-inches above normal. The statewide composite precipitation for the past 12 months is 1.18-inches below normal.

The statewide average winds were below normal this month, ranking as the 19th calmest September of record. The statewide composite average was 7.9 mph, 0.1 mph below normal. The 12-month average is running 0.5-mph below average. The fastest average speed was 12.6 mph at Comertown, with a higher elevation location, Deep Creek, recording 17.6 mph. The fastest measured gust of the month, 85 mph, occurred at Deep Creek on the 21st. Two Medicine recorded a gust of 72 mph on the 20th.

Soil moisture values did recover a bit this month, but remained below average. The September average is 0.7 points below normal. This ranked as the 9th driest of recorded a 1.9 point negative departure. The driest was September 2012. Records began in 1995.



Refer to NEIC's State of the Climate report for the latest monthly discussion:
<http://www.ncdc.noaa.gov/sotc/>.

September 1-5

Very warm temperatures were felt across the state for the first two days of September, then a large storm system brought severe weather to eastern Montana, and heavy rain to central portions. On the second, Pine Hill (Wibaux) reached 103°F. Thunderstorm wind gusts reached 64 mph at Glendive on the 5th, while 2-inch hail was seen near Broadus. Golf-ball size hail was also observed near Busby and Medicine Lake. Rainfall exceeding two inches fell around Cut Bank and in the central Rockies near Lincoln. A larger area of more than 1.5-inches encompassed Wisdom, Cascade, Chester, Conrad, Oilmont and Joplin.

September 6-14

A relatively dry period prevailed during the second week of the month. Warm conditions on the 12th produced new record high temperatures at Cut Bank and Helena.

September 15-22

A cold front brought sharply cooler conditions to the state on the 15th. Heavy rain fell over much of central Montana on the 15th-16th. Another weather system brought heavy rain to southern and southeast Montana from the 17th-18th. Rainfall amounts up to 1.2-inches were reported in the Cooke City area. This was one of the windier periods of the month. Downslope wind gusts reached 73 mph at Two Medicine on the 20th. Ridge-top winds reached 85 mph at Deep Creek on the 21st.

September 23-30

A ridge of high pressure brought very warm air to the state from the 23rd-26th. Record high temperatures were set on the 25th at several locations across the state. Roundup climbed as high as 98°F. After a cold front pushed across the state on the 26th, temperatures settled into a near-normal pattern. This period remained dry.

Precipitation/convection

Severe convective weather occurred on 2 days in September, which is normal. Many of the severe weather reported is listed above. For the year, there have been 31 severe weather days in the state. The normal for this period is 39 days. This is the lowest number of severe weather days, through September, since 1992.

Water year

The most recent water year (October-September) for Montana averaged the 11th warmest of record. The average temperature was 45.5°F, 2.3°F above normal and the warmest since 2012. The greatest positive departures were in the west and central portions. Precipitation averaged 13.72-inches, 1.18-inches below normal. This was the 44th driest of record and the driest since 2012. The driest areas were over the northwest, and the wettest in the east (Fig. 6). Winds averaged 8.7 mph, 0.5-mph below normal. This was the 13th calmest water year of record.

September summary information:

High Temperature	103°F at Pine Hill (2 nd)	Greatest Precip	3.18" near Neihart
Low Temperature	13°F at Gates Park (L and C) (28 th)		5.50" at Lakeview Ridge (Beaverhead)
Warmest Ave Temp	66.9°F at Broadus	Peak Wind Gust	73 mph at Two Medicine (20 th)
Coollest Ave Temp	46.8°F at Gates Park		85 mph at Deep Creek (21 st)
Range of Temp departures	-1.0°F at Yaak to +6.6° at Baker	Highest Ave Wind	12.6 mph at Comertown 17.6 mph at Deep Creek
21 city mean monthly Temperature/Normal	67.3/66.8F 0.5F above normal. 60 th warmest of record (since 1880). 55 th percentile. Oct-Sep 45.5/43.2 2.3F above normal. 11 th warmest of record.	20 city mean monthly wind speed/Normal	7.7 mph/8.1 mph; 19 th calmest of record (since 1936). 25 th percentile. Oct-Sep 8.7 mph/9.4 0.5-mph below normal. 13 th calmest of record.
22 city mean monthly precipitation/Normal	1.26/1.20" – 105% of normal. 61 st wettest of record (since 1880). 36 th percentile. Oct-Sep 13.72"/14.90" – 1.18" below normal. 44 th driest of record.		

Historical Rank of Precipitation (inches) for the Current Month and Water Year to Date

Location	Sep	% of Norm	Rank	Pcntl	Oct 1 – Sep 30	% of norm	Rank	Pcntl	Years
Baker	2.37	207%			15.31	132%			17
Billings	0.27	20%	21	18	11.68	79%	44	39	111
Belgrade	1.05	95%	33	41	12.05	85%	24	30	78
Butte	1.36	136%	83	68	10.56	83%	32	26	120
Cut Bank	2.55	209%	98	90	11.00	101%	49	45	107
Dillon	1.25	149%	52	68	9.12	87%	31	41	75
Glasgow	0.57	61%	50	42	11.32	97%	48	41	115
Great Falls	2.54	179%	113	90	13.54	92%	49	39	123
Havre	1.67	149%	110	81	11.81	105%	66	49	135
Helena	2.08	189%	114	83	10.48	93%	54	39	137
Jordan	0.18	15%			11.93	94%			17
Kalispell	0.75	54%	42	34	13.68	81%	37	30	121
Lewistown	0.77	57%	32	26	14.39	85%	31	25	119
Livingston	1.24	102%	55	48	13.35	90%	42	39	107
Miles City	0.18	17%	18	12	8.25	66%	8	5	138
Missoula	0.52	45%	40	29	11.99	84%	36	27	129
Mullan Pass	0.54	34%	12	15	37.82	99%	33	44	73
Wolf Point	0.22	22%			8.93	73%			17
Glendive	0.76	60%	55	45	12.56	92%	41	36	111
Sidney	3.04	243%	70	92	16.14	113%	55	73	75
BZN-MSU	1.61	115%	76	56	15.99	81%	28	21	128

Rankings and Percentiles are 1=driest, higher numbers=wetter.

For an automated version of this chart, updated daily, go to

<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>

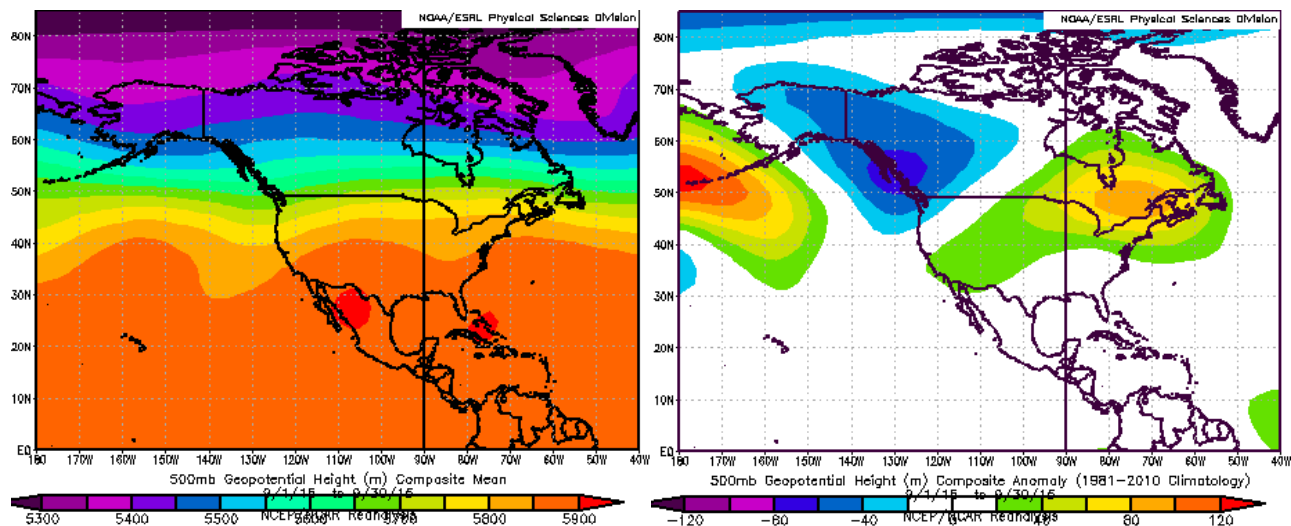


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (top-left) and departure from normal (top-right).

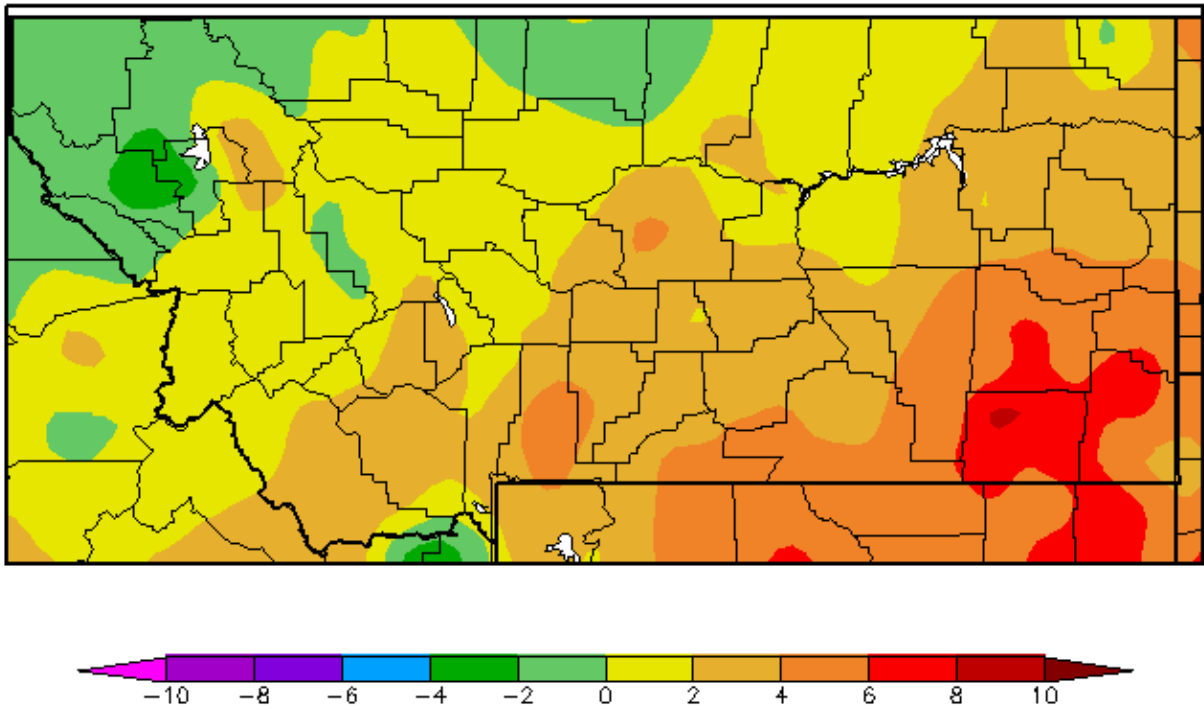


Figure 2. September 2015 temperature departures from normal (°F) (Western Region Climate Center).

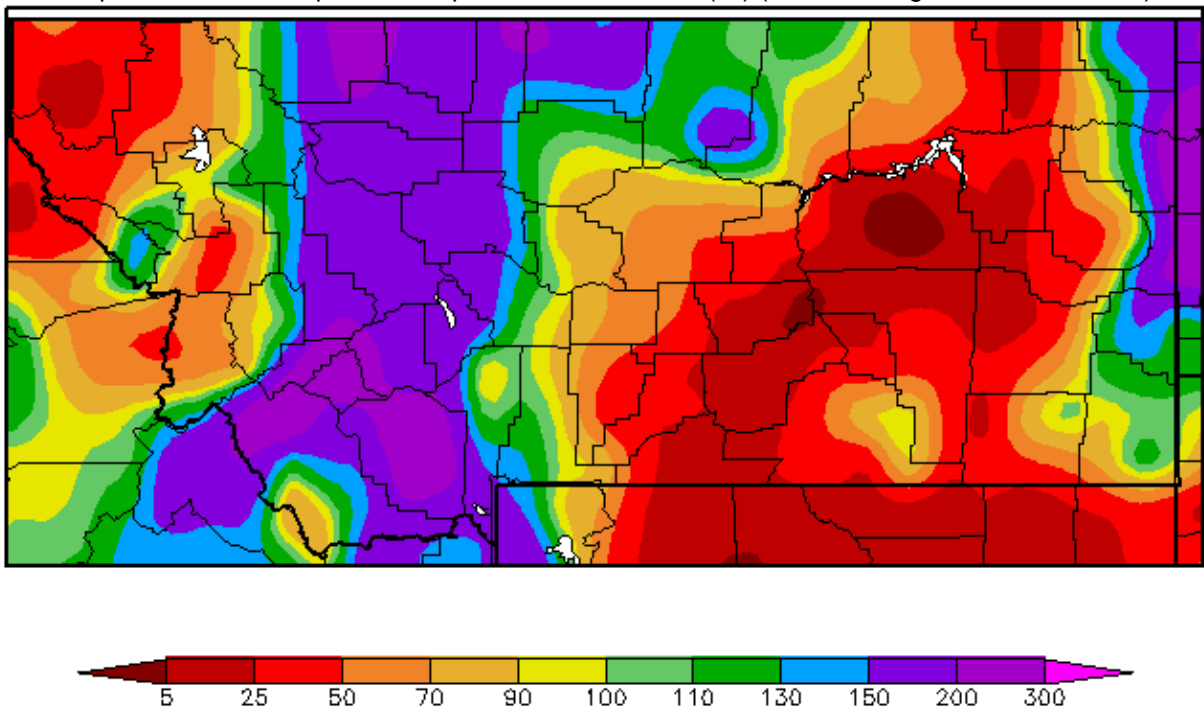


Figure 3. September 2015 precipitation departures from normal (percent) (Western Region Climate Center).

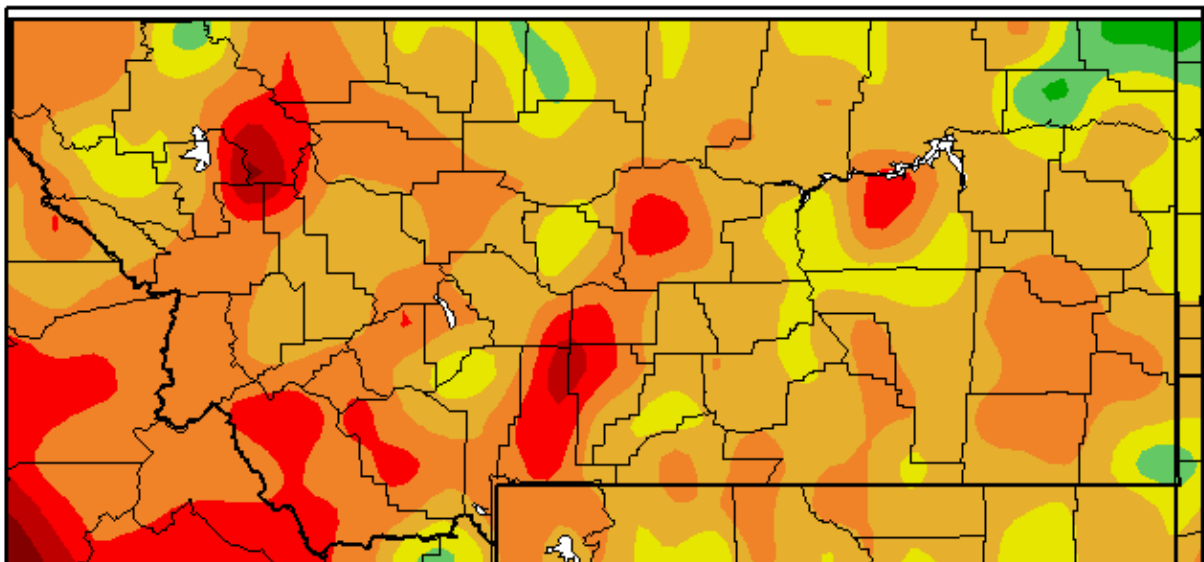


Figure 5. Sep 2014-Oct 2015 temperature departures from normal (°F) (Western Region Climate Center).

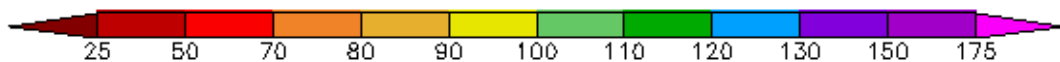
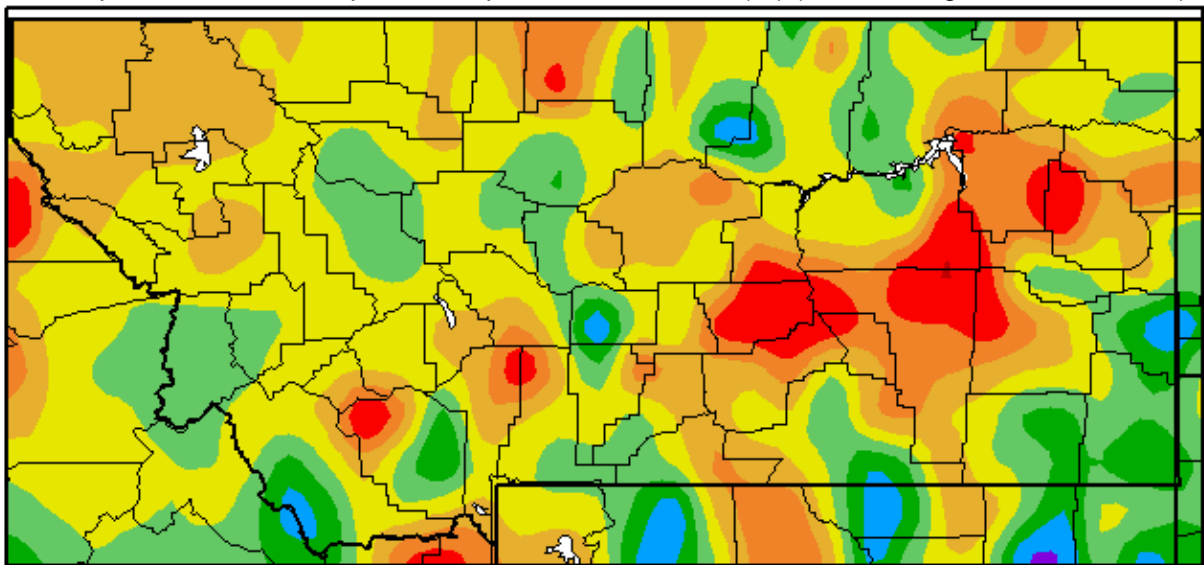


Figure 6. Sep 2014-Oct 2015 precipitation departures from normal (°F) (Western Region Climate Center).

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to:

<http://www.wrh.noaa.gov/tfx/climate/monthlysum/climatesum.php?wfo=tx>

For the latest information on mountain snowpack from the NRCS, go to: <http://www3.wcc.nrcs.usda.gov/snow/index.html>

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to: <http://droughtmonitor.unl.edu/>

These data are preliminary and have not undergone final QC by NCDC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Climatic Data Center (NCDC) <http://www.ncdc.noaa.gov>. Many more links are on the Drought Information Page of the NWS Great Falls web site at <http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tx>. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.